A

DESCRIPTION

OF

TWO MACHINES,

FOR THE

CONVEYANCE AND CURE

OF

FRACTURED LEGS.

THE THIRD EDITION,

With conſiderable IMPROVEMENTS.

[Price One Shilling and Six-pence.]

THE
Conductor and Containing Splints;
OR, A
DESCRIPTION
OF
TWO INSTRUMENTS,
FOR THE
SAFER CONVEYANCE
AND
MORE PERFECT CURE
OF
FRACTURED LEGS:

To which is now added,

An Account of Two Tourniquets upon a new Conſtruction.

THE WHOLE

Illuſtrated with Copper-Plates; repreſenting the ſeveral Inſtruments treated of.

By JONATHAN WATHEN, *Surgeon, F.A.S.*

LONDON:

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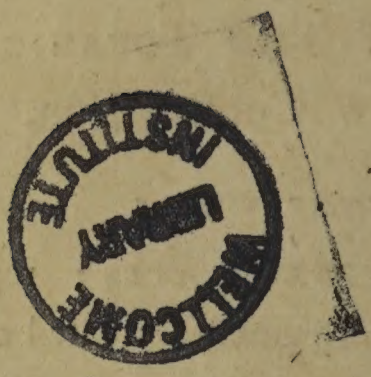
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INTRODUCTION.

SOME years ago, I publiſhed a deſcription of two machines; one for carrying, another for the more eaſy cure, of a fractured leg.

The acknowledged utility of both theſe inventions has induced me to pay a further cloſe attention to their ſtructure; which has led to the diſcovery of very conſiderable improvements in each of them. For this reaſon, I have now printed a third edition of that little tract, with a particular account of the improvements made in the machines of which it treats. To this is added, the repreſentation of two new invented Tourniquets; conſtructed in ſuch a manner, as to be eaſy of application, and capable of being inſtantly ſlackened, tightened, or removed, at pleaſure.

In theſe properties, they poſſeſs all the advantages of M. Petit's Tourniquet; without the incumbrance of its high handle, or the hazard, thereby occaſioned, of an undeſigned alteration, by the motions of the patient or of by-ſtanders.

They are alſo ſo manageable by the operator himſelf, in amputations, as to render the turnſtick needleſs; and, conſequently, preclude the neceſſity of an additional aſſiſtant, which the turnſtick always calls for.

Some, perhaps, may think, that if either of theſe do effectually compreſs the artery, which is the intention of them, there is no need of the other contrivance for the ſame purpoſe. This is true: but as I know not which of the two deſerve the preference, I have preſented both to the judgment of the public. The purchaſe of either of them does not exceed that of Mr. Petit's.

It will not admit a doubt, that in the army and navy a much greater number

of Tourniquets are required, than the ſurgeons of thoſe departments are uſually provided with; for, though wounds, attended with violent contuſions, do not always immediately bleed, even when capital arteries are included in the breach of continuity; yet we have been publickly aſſured by a ſurgeon in the navy, that, in an engagement, where many happen to be wounded about the ſame time, not a few of them loſe their lives by hæmorrhage, from a delay attending the application of the Tourniquet: which can only be prevented, by encreaſing the number of thoſe inſtruments *. Beſides the immediate ſecurity which this would afford to the patients, it would alſo prevent the neceſſity of amputation; which

* See "Obſervations and Remarks reſpecting "the more effectual Means of Preſervation of "wounded Seamen and Marines on board of his "Majeſty's Ships in Time of Action; by James "Rymer, Surgeon of the Royal Navy."

the ſurgeon is often obliged inſtantly to perform, when the bleeding has commenced, to prevent its becoming fatal. Whereas, if the hæmorrhage is effectually ſuppreſſed and ſtopped by the Tourniquet, the patient may then be ſafely left till the engagement is over: when the ſurgeon, being at leiſure to attend to the nature of every caſe, may find, that, in many of them, the operation for the aneuriſm is all that is neceſſary: or, perhaps, that ſome of them are curable by common means, without either of thoſe operations. This obſervation is not intended as a reflection upon the army and navy ſurgeons; but rather for the information of thoſe, who ſuppoſe, that a ſurgeon, during the terrors of an engagement, the ſhrieks of the wounded continually brought to him, and the hurry and ignorance of thoſe about him, ſhould be able to think, determine and act, as if he had only to do with a ſingle patient in a private room; where he is

liable

liable to no ſuch confuſion of thought, and has every convenience and aſſiſtance, that can be wanted, ready at hand.

It is under the former circumſtances, that the uſe of the Tourniquet is of the higheſt importance: for, by the application of it, the patient is ſecured from the danger of a mortal hæmorrhage; and the ſurgeon relieved from the neceſſity of haſtily performing an operation, in the midſt of ſo much diſturbance, and when he is not ſufficiently provided for the purpoſe.

I have not given a particular deſcription of theſe Tourniquets, becauſe a view of the annexed plates, if a ſight of the inſtruments themſelves is not to be obtained, will afford a better idea of their ſtructure and uſe, than could be conveyed by any merely verbal account.

It is evident, they are formed upon the ſame principle as that of the Conductor.

ductor. And it is not unworthy of notice, that the mechaniſm of this laſt named inſtrument admits of various modifications; ſome of which, being properly applied, have been of great ſervice, to the wry neck, incurvated ſpine, crooked legs, &c.

I. Of

I.

Of the Conductor.

THIS inſtrument is deſigned for the ſafe and eaſy conveyance of a broken leg, from the place where the accident happened, till the patient is laid in bed; and is intended to ſerve this purpoſe not only in ſimple, but likewiſe in all compound fractures whatſoever.

The chief alterations made in the ſtructure of the Conductor, ſince its firſt publication, are in the ſtiles and canulas. Theſe, inſtead of being ſquare, are now round; by which new form, the weight of it is reduced near two-thirds, without any diminution of its ſtrength.

This is the only difference to be allowed for in the plates: from which, in every other reſpect, a compleat idea may be formed of the Conductor now recommended.

When

When a fracture happens to the leg, ſo that both bones are broken, its inferior part becomes pendulous and flexible every way: notwithſtanding which, the patient muſt be removed to his own habitation, generally up one or more ſtories; or, if indigent, to the neareſt hoſpital. Nor was it poſſible, in any of the modes of conveyance before known, but that the inferior portion of the fractured limb ſhould be frequently and variouſly contorted and bent; and the parts, ſurrounding the bones, bruiſed, pricked, and irritated, by the extremities of the fractured pieces. Hence muſt ariſe pain, ſwelling, inflammation, ſuppuration, convulſion, mortification; and even death itſelf, unleſs prevented by a timely amputation of the leg.

The fracture was at firſt, perhaps, meerly ſimple, the contuſion ſmall, and the teguments entire; if ſo, the early application of the Conductor would have effectually prevented the whole

train

train of bad conſequences above enumerated.

If, on the contrary, the fracture was originally complicated, oblique, or, the bones were forced through the ſkin; the injuries, ſuſtained by the former modes of conveyance, muſt have been encreaſed and aggravated, in proportion to the violence originally committed: all which miſchiefs are, likewiſe, now effectually prevented, by the timely application of the Conductor. This inſtrument is to be applied upon the fractured leg, in its ſhort or unopened ſtate, without removing either the ſhoe, ſtocking, or boot, if there happens to be one on the leg at the time of the accident.

Its largeſt band is to be buckled immediately below the knee, but above the top of the boot; and the ſmaller one, juſt above the ankle.

The band under the knee being kept fixed there, by hand; the ſurgeon lengthens the Conductor by pulling the lower band downwards: obſerving to

keep the ſtiles and canulas in a ſtraight direction. By theſe means the inſtrument is lengthened: but, as the bands cannot advance, either beyond the knee or ankle; the fractured bones are neceſſarily extended by it, in a proportion ſimilar to that of the Conductor. If the ſtretch of the limb ſhould be now more than is ſufficient; it may be inſtantly diminiſhed to the degree required, by touching the ſprings either alternately, or together, within ſide the canulas.

When the Conductor is thus fixed upon a broken leg, of whatever kind, ſimple or compound, crooked or twiſted; it is thereby inſtantly reſtored to its natural length and ſhape: and it will preſerve it in that ſtate, as long as may be required.

The leg and the inſtrument are now ſo cloſely faſtened and united to each other, that they may be conſidered as one piece, or compact body; admitting large and general motions of the whole: without affecting, or operating in the leaſt, upon

any diſtinct, or particular part. The exceeding great uſefulneſs of the Conductor ariſes from this very circumſtance. For whatever be the motion of the fractured limb at large; the fracture itſelf is not in the ſmalleſt degree diſturbed or affected by that motion: ſo that whatever pain the patient ſuffered from that cauſe before, he never fails to expreſs the ſenſe of relief, as ſoon as the Conductor is thus fixed upon his leg.

If the patient be but at a ſmall diſtance; he may either be helped home, by leaning upon the ſhoulders of two men, or taking the aſſiſtance of crutches, the fractured leg being ſlung in ſuch a manner, that his foot may not touch the ground: or, he may be put into a chair, coach, waggon, or any kind of carriage; only taking care that his foot be not expoſed to preſſure, ſtrokes, or other violence. He may thus be conveyed many miles without any kind of hazard, or pain; excepting from the preſſure of the bands round the knee and ankle, and

even that may be eaſily prevented, by the intervention of a little cotton, wool, &c.

The Conductor ſhould be kept upon the leg until the patient is placed in bed, bleeding, glyſter, &c. adminiſtered, as ſhall be thought neceſſary; and the apparatus provided for treating the fracture, as circumſtances ſhall require. And here is ſeen another very important advantage of this inſtrument; for as it reſtored the fractured bones to their natural poſition, at its firſt application, all further extenſion is thereby rendered unneceſſary*. If the patient has a boot upon

* In the Mem. de l' Acad. Roy. de Chi. tom 2, M. la Faye has given a deſcription, with plates, of two machines: the one for the more eaſy portation and dreſſing of a fracture of the leg and thigh; the other to keep the leg extended in oblique and complicated fractures, by means of a pully and ſtop-winch.---On theſe I ſhall make no remarks, but ſubmit it to others, who ſhall compare them with the Conductor, to determine as to the comparative merits of each, both as to ſimplicity and uſefulneſs. There is

upon his leg; all that part of it, which is above the lower band of the Conductor, muſt be cut away, whilſt the inſtrument remains on. This being done: the remainder of the boot, or, the ſhoe, the ſtocking and Conductor, are then to be taken off from the leg and foot with the greateſt caution, ſo as not to diſturb or miſplace the fractured pieces; which muſt be retained by hand, as exactly as poſſible, in the ſame ſituation, till they are ſecured by *Splints*. But theſe, as well as almoſt every part of the apparatus for the cure of a fractured leg, were, till lately, ſo very deficient, that a compleat and ſightly cure was not to be effected, without the utmoſt degree of attention, uncommon ſkill; and the moſt indefatigable pains, on the part of the ſurgeon.

is another ingenious contrivance for the extenſion of the thigh and leg at the ſame time, invented by Mr. Layman, of North Walſham, Norfolk. But the buſineſs of this inſtrument does not interfere with the Conductor. Gooch's Survey, vol. i. p. 315.

II.

Of the Containing Splints.

THE apparatus for ſetting, retaining, lodging, and defending, a broken leg, formerly conſiſted in ſhort ſplints or færulæ, long ones called junks, fracture boxes, cradles, pillows, bolſters, and bandages, beſides various other machines. And they who, in the cure of fractures, have practiſed on the old plan, need not be reminded of the immenſe trouble which they have found to be occaſioned, both to the patient and themſelves, by the frequent removal and renewal of the deligations, dreſſings, &c. from all which they will be relieved by adopting the late improvements, while the ſalutary ends propoſed are alſo hereby more certainly and effectually anſwered. Mr. Gooch, of Norwich, was, I believe, the firſt who obſerved that "it is ſcarcely "poſſible for a fractured limb to be kept "ſteady, unleſs whatever is made uſe of

"for

" for that purpoſe paſſes over the joint " above and below the fracture;" and, upon this principle, he recommends, inſtead of the ſhort ſplints and fracture box, a machine of his own invention*, which muſt be allowed to be far better calculated for the purpoſe, but is by experience found to be as much inferior in point of eaſe and utility to the long ſplints, ſince introduced by myſelf or others, as that was to the ſhort ſplints and fracture box.

In order to what is called ſetting the leg, or putting the fractured extremities of the bones in exact appoſition, we are directed by the late improved method †, in the firſt place, to bend the knee ‡.

* Gooch's Caſes in Surgery, vol. i. plate 11.

† See firſt edition of the Conductor and containing Splints. The Splints of M. W. Sharp; and M. Pott, on Fractures, page 16, &c.

‡ 'Tis true that M. Petit, in his *Traité des Maladies des Os*, tom 1, *De la Cure des Luxations*, orders, in general, the muſcles to be relaxed before and during the extenſion of the limb, p. 51. And he repeats the ſame in his Chap. ſur les Fractures, tom 2, page 30; but ſays nothing about preſerving the fractured leg in that poſture afterwards.

The

The muſcles of the leg, being relaxed by this poſition, will make leſs reſiſtance to the neceſſary extenſion of the bones: ſo that if the Conductor has not been before applied, which will ever preclude all other exertions, the hands alone, in general, will be found ſufficient. But if any impediments render this mode of extenſion ineffectual, the Conductor muſt be put on as before directed: by which the end will be accompliſhed without further trouble. The fractured portions being now made as ſtraight as any other part of the limb; the Conductor may be ſuffered to remain on, whilſt the circumſtances of the injury are minutely enquired into. If the fracture be compound or complicated; the ſplinters, which are looſe, ſhould be extracted, ſharp and projecting points cut off; the wound, if neceſſary, dilated, and dreſſed, and the whole encloſed in a ſix-tailed bandage; which I generally find to be ſufficient, and therefore prefer to one that is wider, becauſe it is uſed

with

with the leaſt trouble. The whole of this proceſs, or whatever elſe is thought needful, may be performed with much greater eaſe, both to the patient and ſurgeon, by the aſſiſtance of the Conductor, than when the leg is ſuſpended by hand.

It was once the univerſal, and it ſtill is a frequent practice, when the leg is much ſwelled, &c. to wait till it ſubſides, before any attempt is made to replace or retain the fracture. But as the diſlocation and diſtortion of the injured parts were the true cauſes of the tumour, &c. the reſtoration of the parts to their natural place and figure, and their preſervation in that ſtate, will more effectually prevent or remove thoſe complaints, with all their dire effects, than can be done by Fotus's cataplaſms, &c. alone, in a much longer ſpace of time. For this reaſon, none of the ſymptoms, which are ſeen to accompany a fractured leg, in any ſtate, ſhort of that which requires immediate amputation, can be

a juſt objection to the application of the ſplints; and eſpecially as Fotus's cataplaſms, &c. are, at the ſame time, equally admiſſible, and are even rendered more beneficial by being uſed with, than they poſſibly could without them.

Every thing neceſſary being done to the fracture, whilſt the Conductor remains upon the leg; the patient is then to be laid in bed, near the edge, and on the ſide of the body on which the fracture is, as admitting an eaſier acceſs to the part. The ſplints being prepared with ſoft bolſters, the Conductor is to be very gently and gradually taken off; whilſt the limb is held, by hand, exactly in the ſame ſituation as when that inſtrument was upon it, till it is lodged in the lower ſplint, and covered by the upper: both which muſt be faſtened on the leg, by ſtraps and pins, as may be ſeen in the plate *. The patient's body

* I generally uſe the ſplints without either pins or ſtraps, and with extemporaneous ligatures only.

is

is to be kept on the ſide of the fractured limb for a few days only, if the caſe be ſimple; but for a longer time, if it be compound or complicate, for reaſons too obvious to be mentioned: the leg being all the while a little bent, and laid upon a pillow, as its eaſieſt and ſafeſt poſition. Afterwards, the patient may be turned on the other ſide: but muſt never lie on his back, whilſt his leg and foot are inclined on either ſide; becauſe that would occaſion a little twiſt in the fracture, and a final defect in the cure. For, it is a certain fact in diſlocations, as well as in fractures, that as the future uſefulneſs of the injured member is greater or leſs, according to the degree in which the natural conformation is reſtored; ſo that is with certainty to be judged of from the degree in which the limb recovers its natural appearance. When the leg is turned on the oppoſite ſide, it muſt be ſupported with pillows from above the knee and below the foot; ſo as to keep the whole upon a level with the upper

ſide of the body. The advantages derived from the inflection of the knee in ſetting, and eſpecially during the earlier period of the cure, have been noticed, and that poſture recommended by ſeveral practitioners of late years *. It is however a little ſurprizing, that a practice of ſo much utility ſhould have been ſo long neglected; though it had been enforced and recommended by the moſt celebrated ſurgeons of the laſt century. Fabricius Hildanus ſays, "that in "fractures of the leg many ſurgeons "are guilty of great error, by placing "it ſo, that the weight of the limb "reſts upon the heel, which occaſions "more ſuffering in that part, than in "the fracture itſelf, by means of the "large tendons inſerted into it. Sur-"geons, therefore, ſhould not be ſo "ſolicitous to preſerve the limb in a "poſture, ſo injurious to the patient; "but, on the contrary, the leg, as well

* This was noticed in the firſt edition of this tract: by M. W. Sharp, in his account of a new method of treating fractured legs—by M. Pott, and others, on fractures.

"as

" as the patient's body, ſhould be
" placed, ſometimes in one poſture,
" or on one ſide, and ſometimes on
" the other, by which many evils are
" avoided *."

Aquapendens is ſtill more particular, and inſiſts that " You muſt in the poſi-
" tion of the fractured limb, as well as
" in the extenſion and deligation of it,
" have due regard to the true figure of
" the member; whereby you will pre-
" vent pain, and keep the muſcles
" entire on both ſides. This is the
" middle figure, or that poſition, where-
" in each member ſtands or lies in the
" ſtate of nature when at reſt; for in-
" ſtance, the angular figure of the cubit,
" and the ſtraight in the carpus; as be-
" ing an intermediate poſition, between
" the extreme motions of each mem-
" ber. Unleſs you be careful in ob-
" ſerving this poſition, the muſcles
" will grow painful ſoon after †." He

* Obſerv. 93. De ſitu fractarum cent. prima, pag. 71, edit. 1682, Francfort ad Mænum.

† Chirurgia univerſalis, Lib. 4. cap. 5.

repeats

repeats and ſtrenuouſly urges the ſame precautions in the deligation, and collocation, of luxations; and adviſes always to keep the limb in a middle poſition *.

Whenever it is neceſſary to inſpect the injured part, the patient muſt be placed again on the ſame ſide, and in the ſame ſituation, as at firſt. Sufficient time having been given for the ſeparated parts in ſome degree to cement and conſolidate; the ſplints may be pulled downwards, the upper one a leſs way, but the lower or outer one ſo far as to project behind the heel: and both are to be thus faſtened again upon the leg. After this, the patient may be permitted to lie on his back, only taking care that his knee be ſtill ſupported in the bended poſture, by pillows properly placed under it. The heel will be ſufficiently defended from all preſſure by the now projected ſtate of the outer ſplint; and if the bed-cloths ſhould at all incommode the foot by their weight,

* Chirurgia univerſalis, Lib. 5, cap. 2 & 5.

a ſingle

a ſingle pillow will be ſufficient to remove that incumbrance.

The uſefulneſs of long ſplints, of the inflected poſition of the knee, and of the lateral poſture of the leg and body, where both the tibia and fibula are broken, are points in practice, at leaſt ſo far as I know, now ſo generally aſſented to, as to be uſually adopted in the cure of accidents of that kind.

I ſhall therefore proceed to give ſome account of the improvements which theſe ſplints have received ſince my firſt publication on the ſubject. But that they may be better underſtood, I beg leave to recommend to the reader's particular attention, the two following preliminary obſervations:

1. If there be a circumſtance of more than ordinary importance in curing a broken leg, it is that of ſecuring the immobility of the foot, as well as of the fracture itſelf; the latter of which is in a great meaſure dependant on the former.

2. The

2. The foot, in this caſe, that is, whilſt wholly at reſt, may be conſidered as a dead weight, which can have no effect at all: but if it moves, which it is very liable to do, unleſs properly ſecured, by the action voluntary and involuntary of the numerous muſcles and tendons inſerted into it, will greatly affect the fractured parts, not only by means of its own weight, but alſo by the additional force that it will derive from the flexibility of the intervening ankle joint.

I have before obſerved, that the propriety of the inflected poſition was ſeen, and that poſture of the broken leg recommended, ſo long ago as the middle of the laſt century. I cannot, however, conceive, how the apparatus then in uſe could have been made effectual for this purpoſe; and I am perſuaded, that the want of a better was the true reaſon why the advice was not followed. But this poſture of the leg is not only admitted by theſe ſplints, but it is by them rendered

rendered the moſt convenient of all others, and beneficial to the patient.

We have learned, by long experience, that the old method, of ſhort ſplints, fracture boxes, cradles, &c. was inadequate to the end of ſecuring and keeping the ankle and foot from motion, even when it reſted upon the heel.

Mr. Gooch, myſelf, and others, ſenſible of the inſufficiency of the former apparatus, for the completion of a deſign ſo important and neceſſary, did, as was before obſerved, recommend long ſplints, extending from above the knee to below the ankle, as a remedy for thoſe defects; and they were found greatly to excel, in point of utility, thoſe ſhorter ones, which were generally uſed before that time *. But there appeared to be ſtill need of further improvements: for, none of the long ſplints, firſt invented, were ſo ſufficient to confine the foot

* Gooch's Surgery, Vol. i. Firſt edition of the Conductor, &c. Sharp, Pott, and others, on Fractures.

from motion, as to prevent the fracture from being occaſionally diſturbed. In order, therefore, to ſecure the immobility of the foot more effectually; I have ſince found it neceſſary to extend the extremity of the outer or lower ſplint underneath the ſole, and the inner or upper one over the inſtep; and to faſten theſe lengthened portions upon the foot, by a diſtinct ligature or ſtrap. I have alſo ſubſtituted thin iron plate, covered with fuſtian; which I prefer to the leather ones firſt in uſe, becauſe equally light, and more laſting.

It is by theſe additional pieces alone, that the foot is certainly ſecured from all motion. For, it may be juſtly ſaid of theſe lengthened ſplints, as was before obſerved of the Conductor, that, by means of them, the leg, foot and ſplints, are made one compact piece or body; the poſition of which may be altered, at any time, without producing the leaſt particular commotion in the fracture itſelf. It is obſervable in compound

and

and complicate fractures of the leg, that the worſt injuries, ſuch as wounds, lacerations, ſwellings, &c. are produced chiefly by the lower extremity of the upper portion of the fractured tibia; and that they conſequently affect the inner ſide of the leg, more than any other part of that member. The uſefulneſs of theſe ſplints, in ſuch caſes, is eſpecially obvious: for, the under one, in which the leg is lodged, is of itſelf ſufficient to keep the fractured portions in a fixed ſtate; whilſt the upper ſplint is removed to give opportunity for fomenting, dreſſing, &c. as there ſhall be occaſion, and is then again replaced. But if, on the contrary, theſe compound effects ſhould ariſe from a fracture of the fibula, the outſide of the leg muſt then be treated in much the ſame manner. This, however, ſeldom happens, in compariſon of the former: and when it does, requires no other difference in the management of it, but that the patient muſt then lie on the ſide oppoſite the

fracture; the ligatures muſt be tied on the outer, inſtead of the inner, ſplint; and the knee, leg and foot, muſt be ſupported by pillows, &c. of an equal heighth with the upper ſide of the body. By theſe means, the outſide of the leg will be rendered acceſſible to the ſurgeon, with nearly the ſame eaſe to the patient, as when the inſide of the leg is the principal ſeat of the injury.

From what has been ſaid of theſe ſplints; of the advantages of the inflected poſture of the knee; and of the lateral poſition of the body, leg and foot, eſpecially in the firſt ſtages of the cure of a broken leg; it is probable, that junks, fracture boxes, cradles, circular and ſpiral bandages, &c. &c. will, for the future, be but ſeldom uſed, in the treatment of accidents of this nature.

EXPLA-

EXPLANATION

OF THE

PLATES.

PLATE I.

Shewing the Skeleton of the Conductor, ſeparated into two Portions.

FIGURE I.

The Knee-Band (*a*) made of Tin, a little bent; divided by four Joints (*b*) that it may fit any Limb, great or ſmall; Holes (*c*) for fixing the Buckle and Strap; others (*d*) round each Margin, for ſewing on the Padding; two Tin Canulas (*e*) grooved on the Outſide, and furniſhed on the Inſide with Braſs Springs (*f*) and Catches (*g*); ſmall Holes (*h*) through which the Catches paſs to meet the Serræ of the upright Portions, when they are within the Canulas.

The Figure in the Middle repreſents the Inſide of the Tube with the Groove.

FIGURE

EXPLANATION, &c.

FIGURE II.

The Ancle Band (*a*) conſtructed as the Knee-Band, but leſs; Shoulders (*b*) to ſupport and render the ſerrated Portions parallel to the grooved Canulas; both of Braſs.

By compreſſing the Springs, the Catches are raiſed, and admit the whole length of the upright, ſerrated Portions within the Canulas; reducing the Conductor to near half its length: from which reduction of the inſtrument, by the diſpoſition of the Catches and Serræ, the Canulas are retracted without difficulty; but cannot be returned the ſame way, unleſs the Catches are elevated by compreſſing the Springs. By this means, when the Conductor is fixed, the extenſion hereby given to the Leg, whatever it be, is ſecured with the greateſt certainty, though alterable with the utmoſt eaſe.

PLATE II.

The ſame Inſtrument covered with Leather; that it may ſit eaſy on the Limb.

PLATE

EXPLANATION, &c.

PLATE III.

The Conductor applied to a compound fractured Leg; by which the Limb is fitted for Conveyance.

PLATE IV.

FIGURE I. and II.

The Splints applied upon a broken Leg; ſo that the Foot Pieces are plainly to be ſeen on both ſides.

FIGURE III.

The Rack Tourniquet upon the Thigh.

PLATE V.

FIGURE I.

The Check Wheel Tourniquet upon the Thigh.

FIGURE II.

The Rack Tourniquet, as large as the Inſtrument itſelf.

FIGURE III.

The Check Wheel in the ſame Proportion.

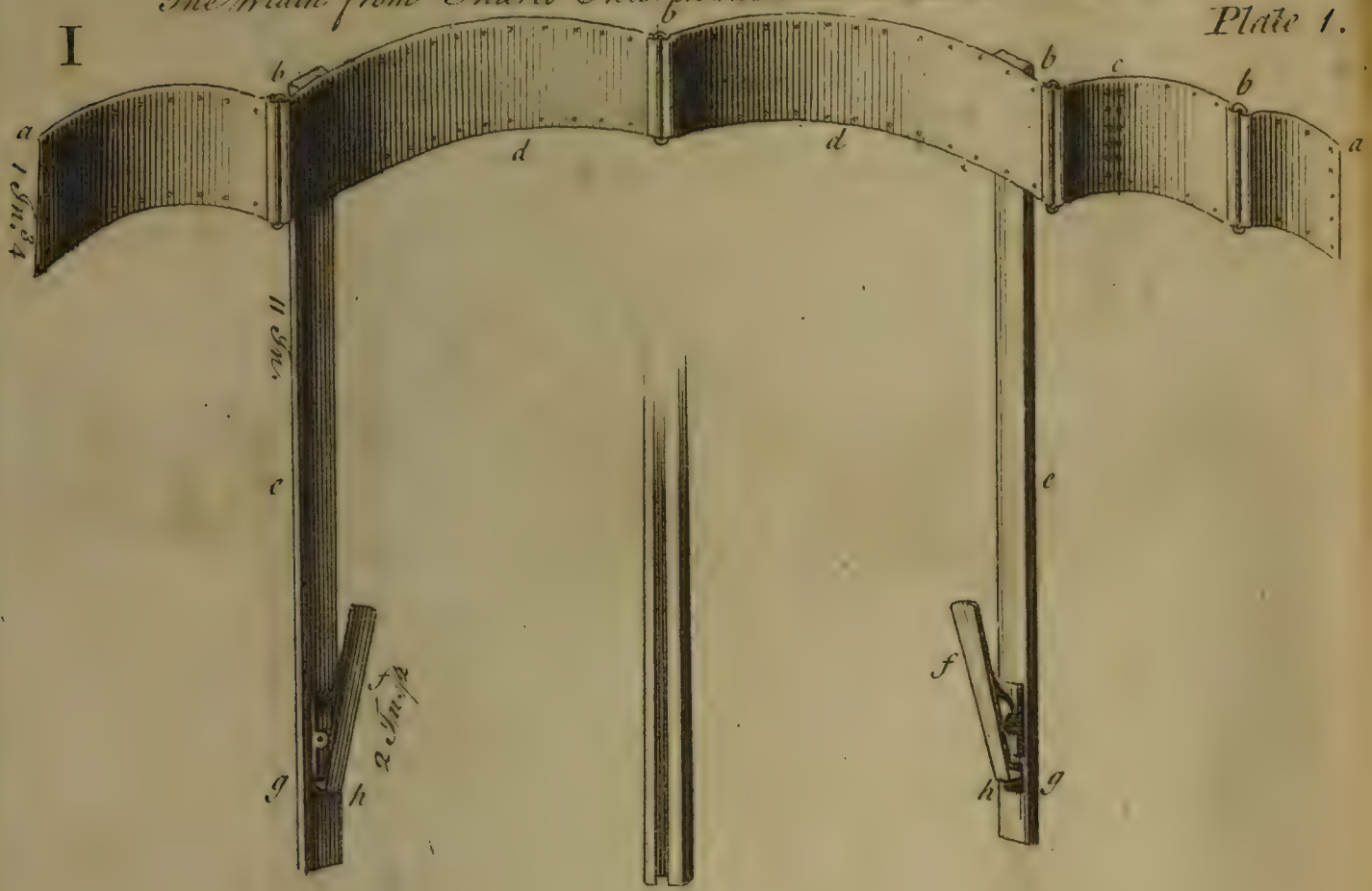
N. B. Theſe Inſtruments are ſold by M. PEPYS, Surgeon's Inſtrument-Maker, in the *Poultry*.

F I N I S.

The Width from End to End in the View as here Drawn, 18 In.

Plate 1.

I



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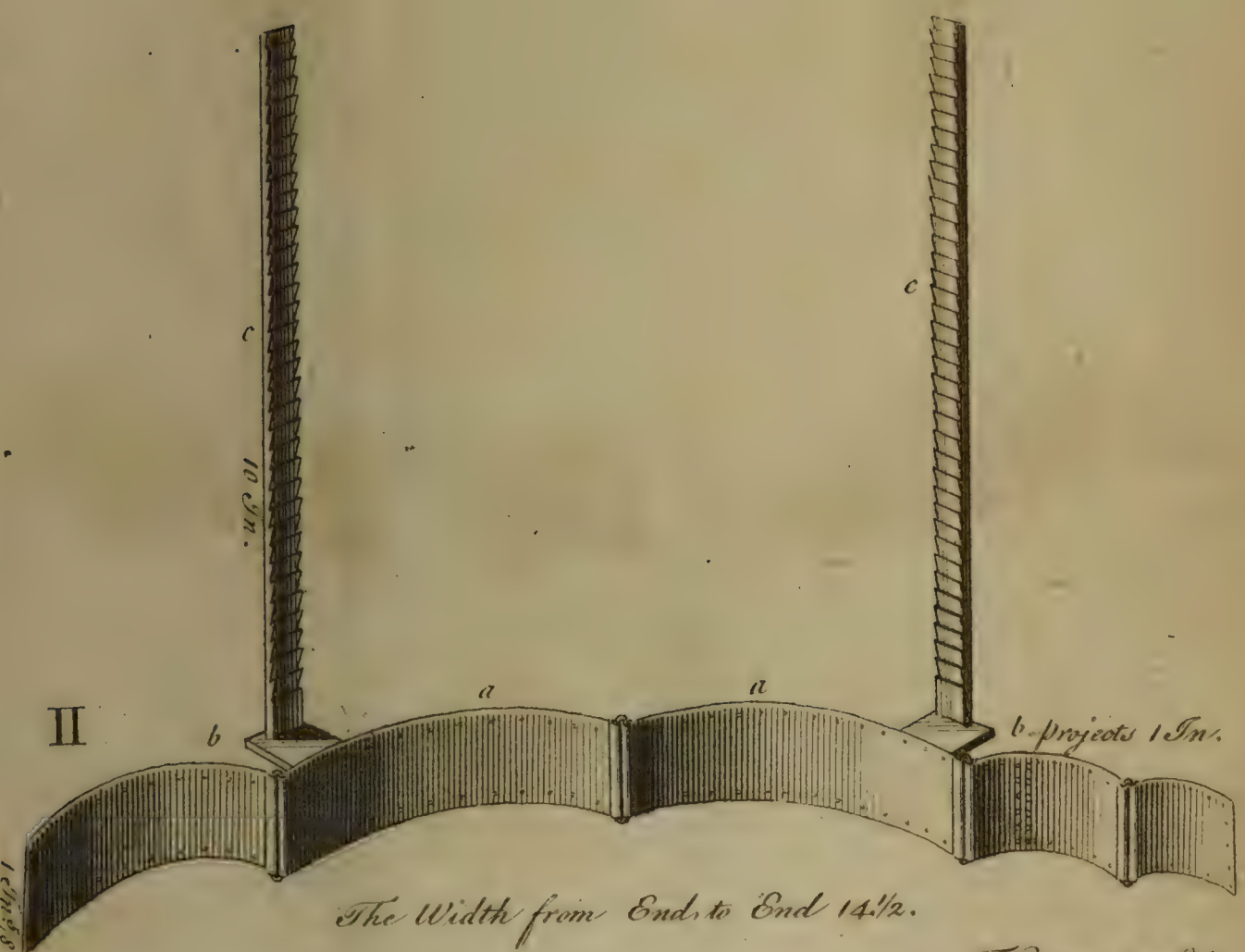
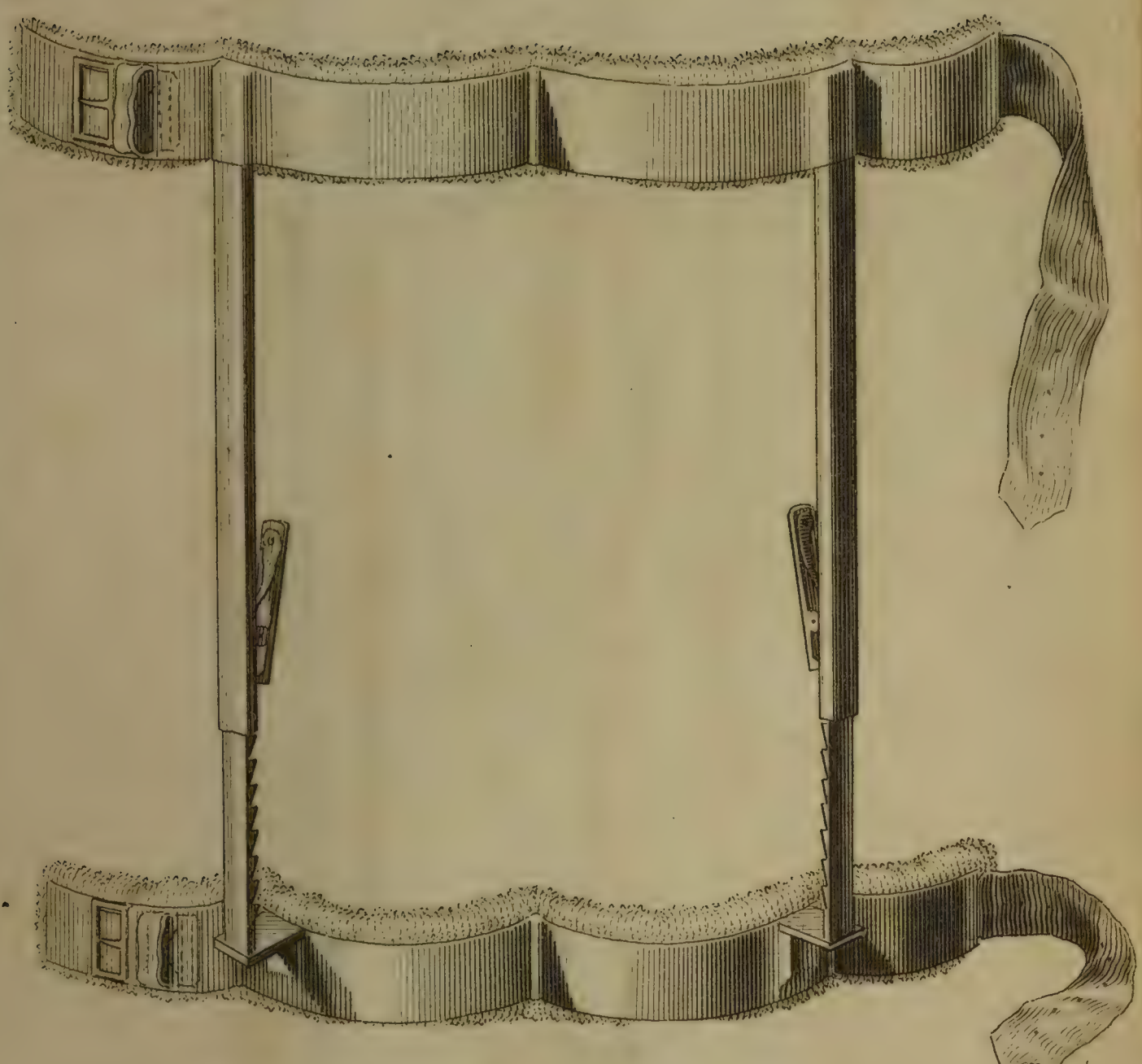


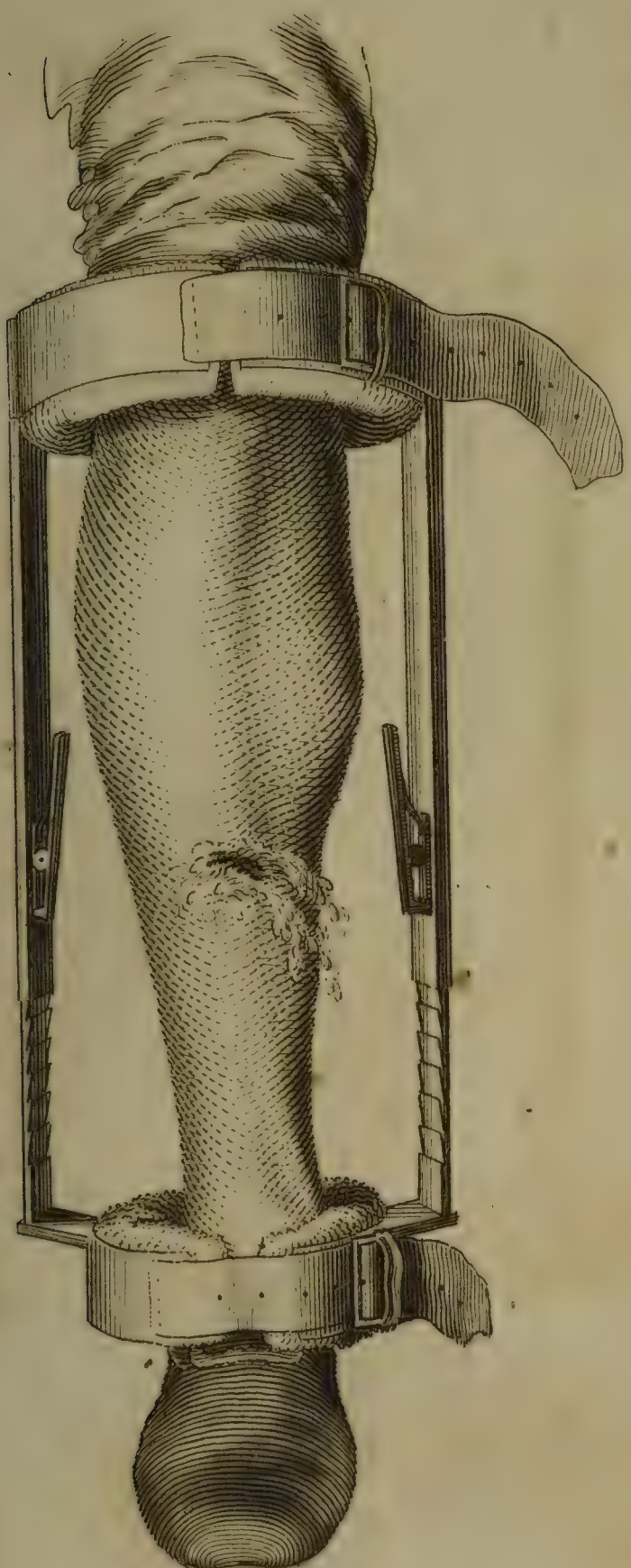
The Width from End to End 14 1/2.

T. Bonnor del. et sculp.



T. Bonnor del.et Sculp.

Plate 3.



T. Bonnor del. et sculp.

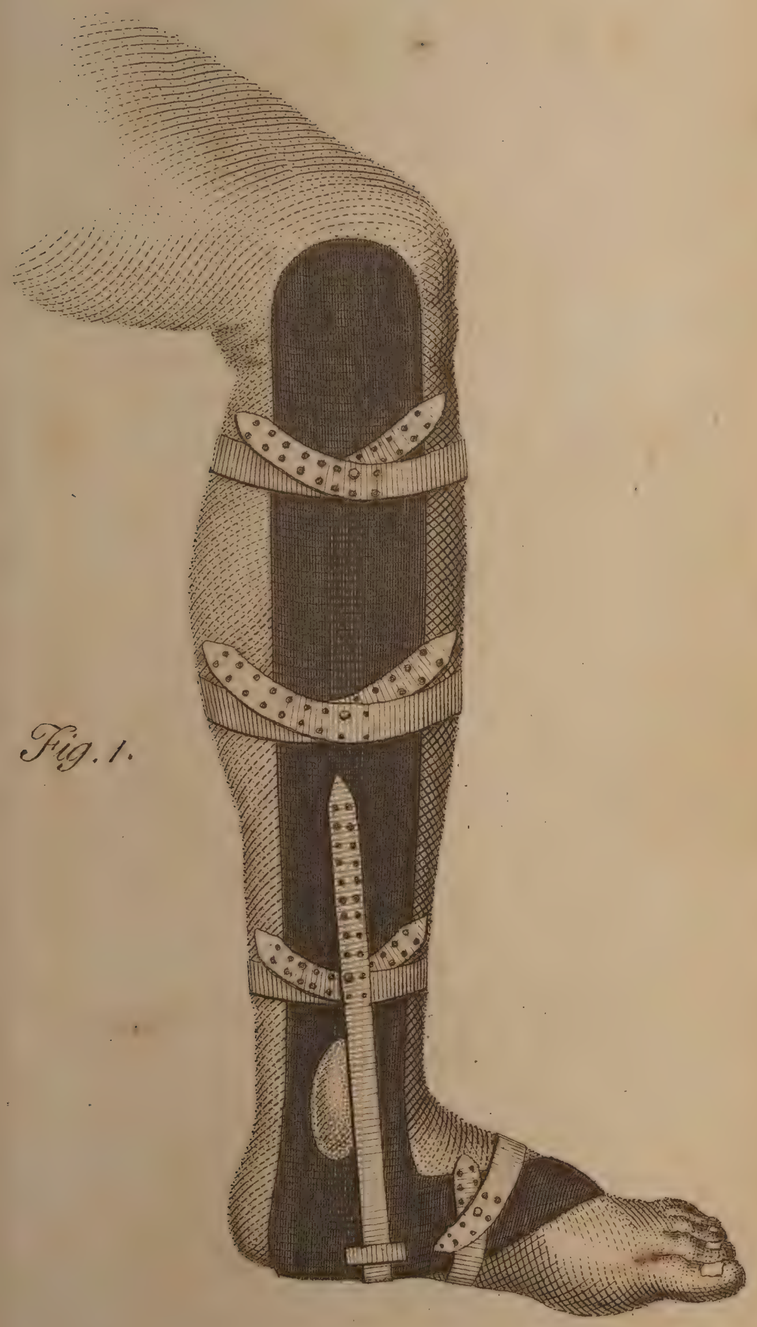


Fig. 1.

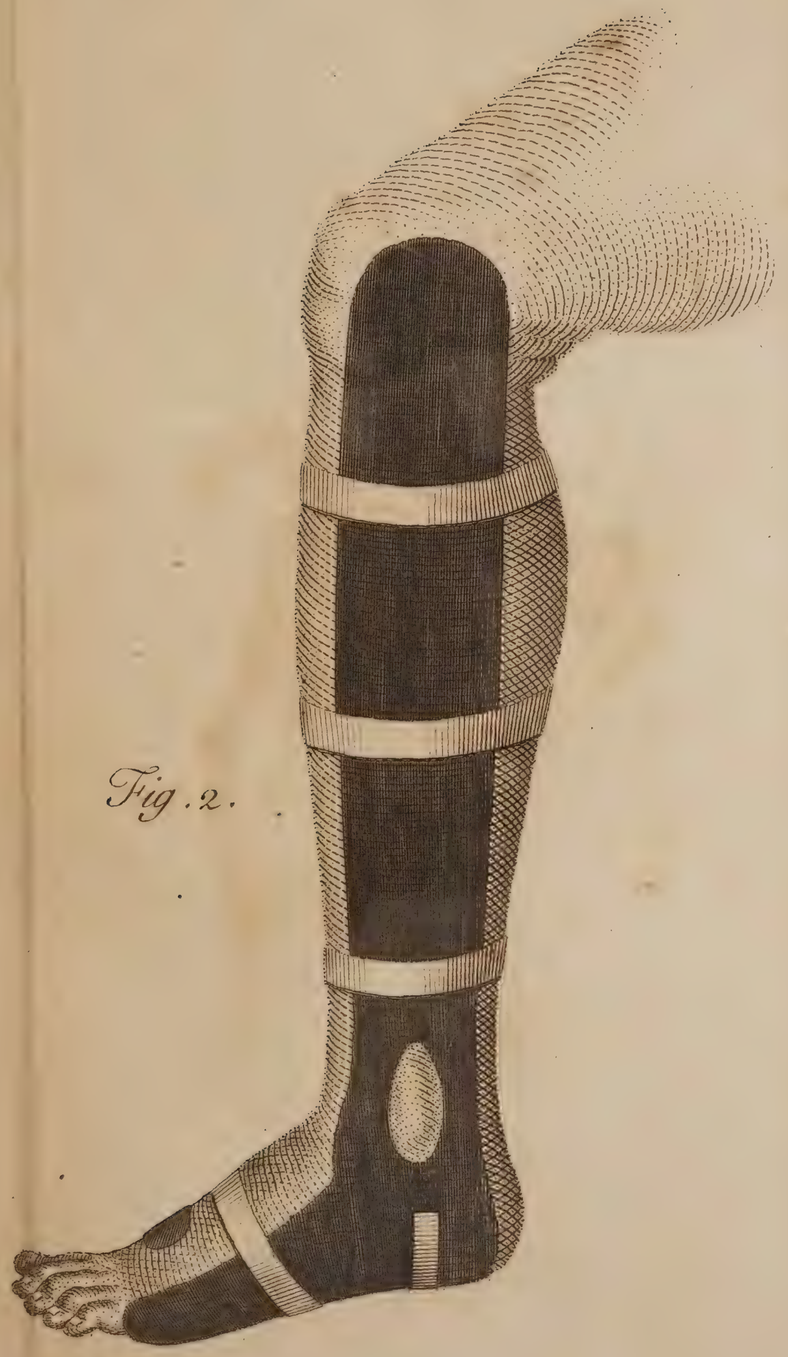


Fig. 2.

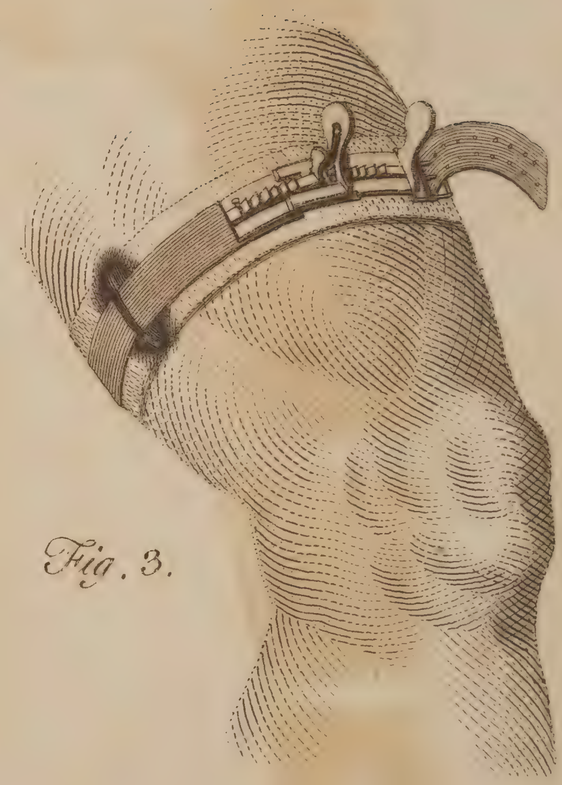


Fig. 3.

I. Lodge del et Sculp.

Plate .V.

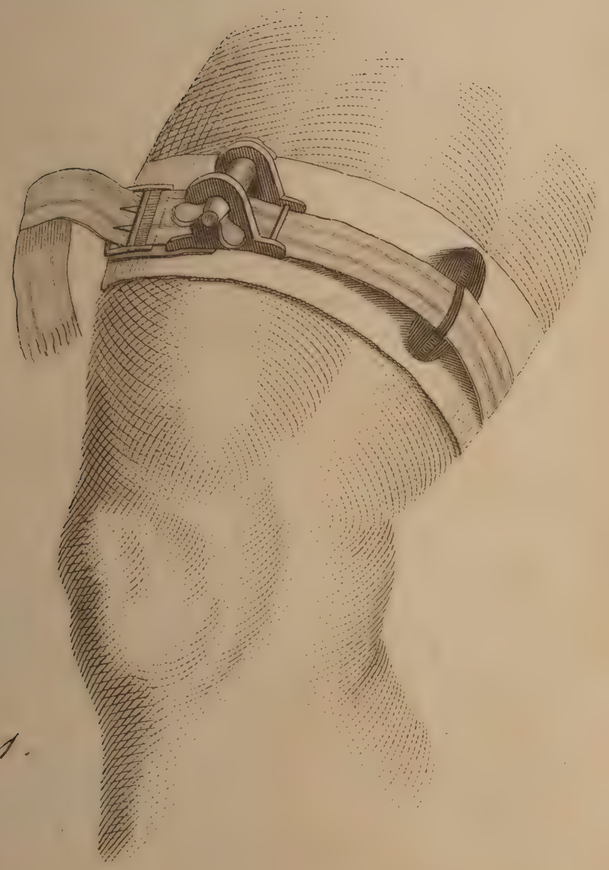
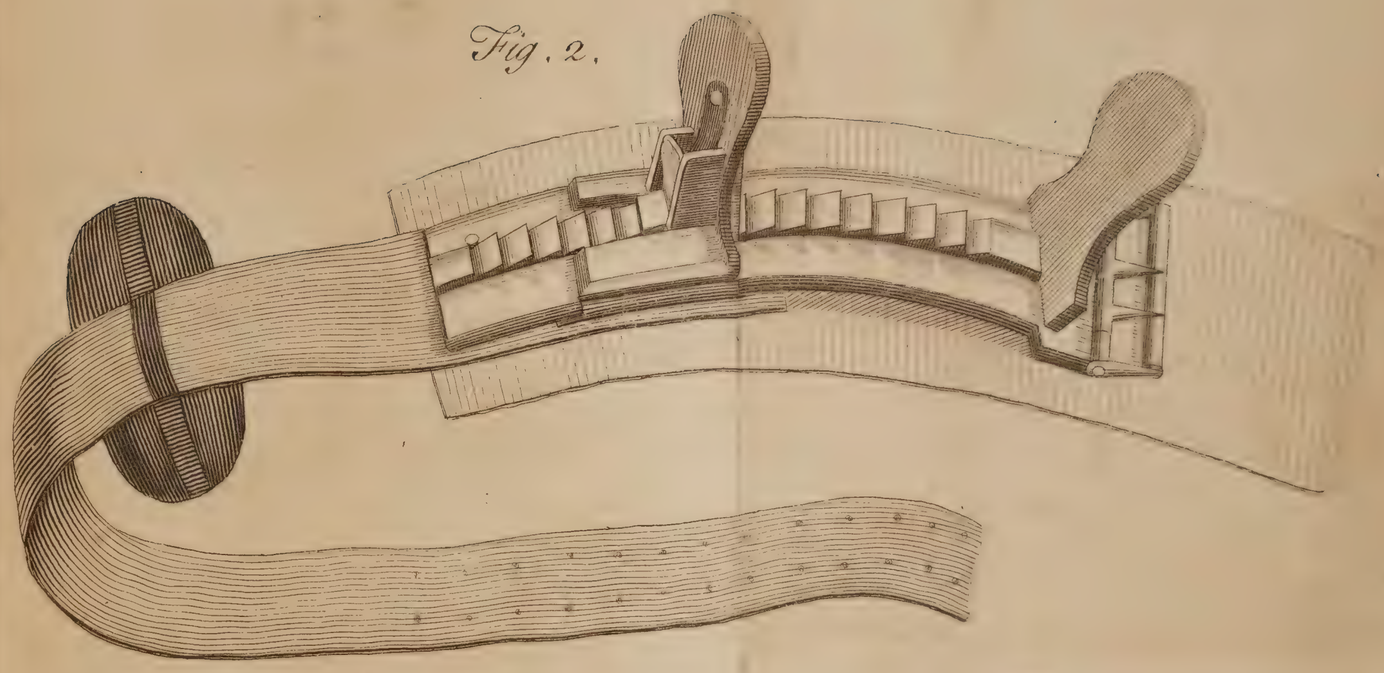


Fig. 1.

Fig. 2.



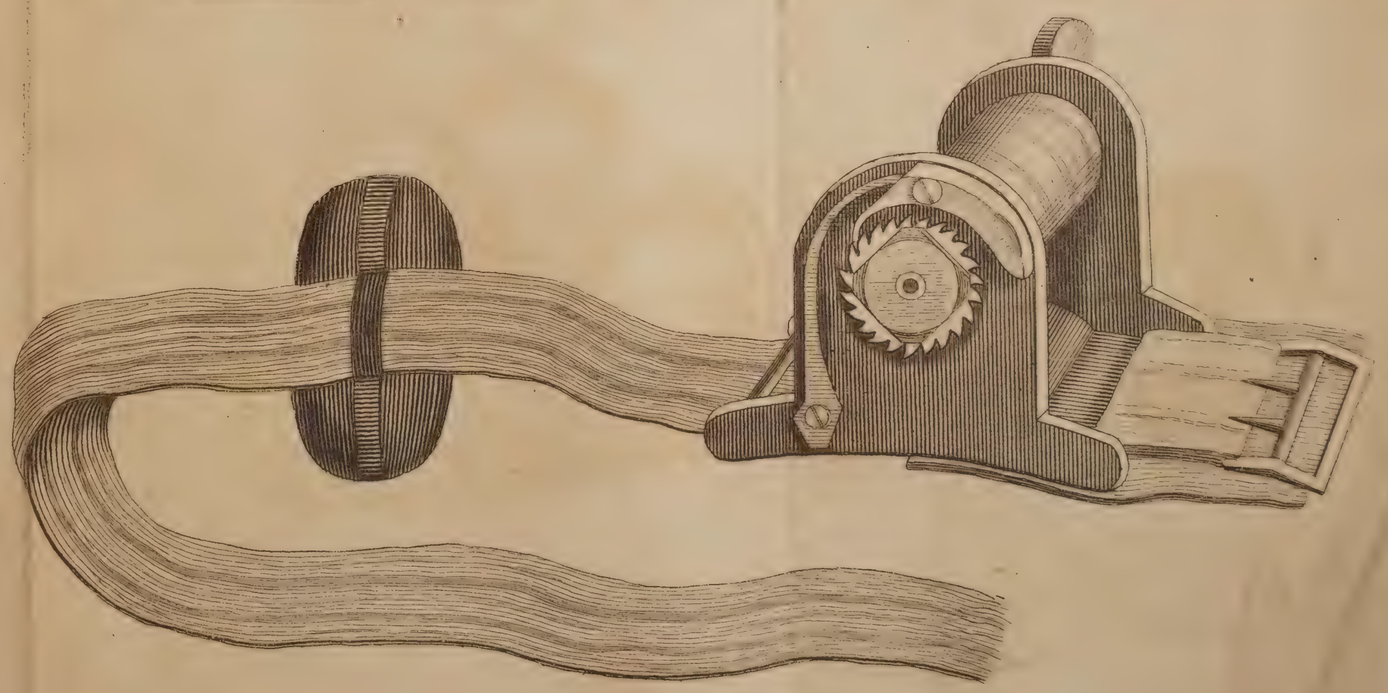


Fig. 3.